MachairWind Offshore Windfarm

Appendix A – Mitigation Register

ScottishPower Renewables | MachairWind Offshore Windfarm

SEPTEMBER 2024

DOCUMENT ID: MCW-DWF-PMG-REP-IBR-000001
Revision 1

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GLOSSARY OF ACRONYMS

Term	Definition
AEZ	Archaeological Exclusion Zones
BWM	The International Convention for the Control and Management of Ships' Ballast Water and Sediments
EIA	Environmental Impact Assessment
ERCoP	Emergency Response and Cooperation Plan
FLO	Fisheries Liaison Officer
FLOWW	Fisheries Liaison with Offshore Wind and Wet Renewables
FMMS	Fisheries Management and Mitigation Strategy
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IEMA	Institute of Environmental Management and Assessment
IMO	International Maritime Organisation
INNSMP	Invasive Non-Native Species Management Plan
km	Kilometres
LMP	Lighting and Marking Plan
MARPOL	The International Convention for the Prevention of Pollution from Ships
MCA	Maritime Coastguard Agency
MGN	Marine Guidance Note
MHWS	Mean High Water Springs
MMMP	Marine Mammal Mitigation Protocol
MPCP	Marine Pollution Contingency Plan
NLB	Northern Lighthouse Board
NSP	Navigational Safety Plan
O&M	Operation and Maintenance
OREI	Offshore Renewable Energy Installations
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PAD	Protocol for Archaeological Discoveries
PEMP	Project Environmental Management Plan
SAR	Search and Rescue
SCDS	Supply Chain Development Statement
SEPA	Scottish Environment Protection Agency
SMP	Sectoral Marine Plan
SNH	Scottish National Heritage

Term	Definition
SOLAS	International Convention for the Safety of Life at Sea
UK	United Kingdom
UXO	Unexploded Ordnance
WDA	Windfarm Development Area
WLA	Wild Land Areas
WSI	Written Scheme of Investigation
WTG	Wind Turbine Generator

GLOSSARY OF TERMS

Term	Definition
The Applicant	The legal entity submitting consent applications for the MachairWind Offshore Windfarm, namely MachairWind Limited.
Cable protection	Protective measure to minimise the effects of scour and hazards along the inter-array cables and/or offshore substation platform link cables (e.g. cable exposure or snagging), as well as for protecting inter-array cables and/or offshore substation platform link cables at infrastructure crossing points.
Collision	The act or process of two moving objects colliding.
Development Area	Application boundary for consenting purposes which, for the Project, consists of a Windfarm Development Area, Offshore Transmission Development Area, and Onshore Transmission Development Area.
Environmental Impact Assessment (EIA)	The process of evaluating the likely significant environmental effects of a proposed development over and above the existing circumstances (or 'baseline').
Highest astronomical tide	The highest level that can be expected to occur under average meteorological conditions and under any combination of astronomical conditions.
Landfall	The area from Mean Low Water Springs to a transition bay(s), where the offshore export cable(s) come ashore.
Landings	Quantitative description of the amount of fish returned to port for sale, in terms of value or weight.
Lowest Astronomical Tide (LAT)	The lowest level that can be expected to occur under average meteorological conditions and under any combination of astronomical conditions.
Mean High Water Springs (MHWS)	The average, over a year, of the heights of two successive high waters during those periods of 24 hours (once every fortnight) when the range of the tide is greatest.
OSPAR	OSPAR started in 1972 with the Oslo Convention against dumping and was broadened to cover land-based sources of marine pollution and the offshore industry by the Paris Convention of 1974. These two conventions were unified, updated and extended by the 1992 OSPAR Convention. OSPAR is so named because of the original Oslo and Paris Conventions ("OS" for Oslo and "PAR" for Paris).
Safety zones	An area of water around or adjacent to a wind turbine generator and substructure which is to be constructed, extended, operated or decommissioned, from which certain or all classes of vessels are excluded and within which activities can be regulated for the purpose of securing safety of the wind turbine generator, substructure or vessels in that vicinity, and individuals on both the wind turbine generator, substructure or vessel, in line with Section 95 of the Energy Act 2004.
ScotWind	A Crown Estate Scotland seabed leasing round for offshore wind projects in which the process enabled developers to apply for seabed rights to plan and build windfarms in Scottish waters.
Scour protection	Protective measures to avoid sediment being eroded away from the base of the wind turbine generator foundations as a result of the flow of water.
The Project	MachairWind Offshore Windfarm.
WDA infrastructure	The offshore generation infrastructure located within the WDA including but not limited to: WTGs, fixed foundations, IACs, and external cable and scour protection.

Term	Definition
Wind Turbine Generator (WTG)	A wind turbine generator which converts wind energy into electrical energy. Each wind turbine generator is a complex system composed of a high number of components. Typically, the main components include the rotor assembly (composed of three blades and a hub); the nacelle (containing a generator, shaft and gearbox, power electronic converter and transformer); and the tower (containing lifting equipment and the switchgear).
Windfarm Development Area (WDA)	The application boundary within which consent will be sought for the WDA infrastructure. The WDA is subject to a Section 36 consent and Marine Licence(s) application which is being applied for separately from the OfTDA and OnTDA.

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1 INTRODUCTION

1. This appendix provides a summary (**Table 1.1**) of the proposed embedded mitigation applicable to the Windfarm Development Area (WDA) Environmental Impact Assessment (EIA), as detailed in each technical chapter of this Scoping Report (**Chapters 6 to 20**).

2. The assessment of the likely significant environmental effects will take embedded mitigation into account when determining the magnitude of impact as part of the EIA. As a result, likely significant effects which might arise prior to the implementation of embedded mitigation do not need to be identified as there is no potential for these effects to arise (Institute of Environmental Management and Assessment (IEMA), 2016).

3. It is expected that the Scoping Opinion and ongoing stakeholder engagement will further refine and develop the proposed mitigation measures and plans as the EIA progresses. This may include the identification of additional mitigation to minimise any significant residual effects.

4. This Mitigation Register is therefore considered to be a live document which will be updated accordingly throughout the EIA process.

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Table 1.1 Mitigation Register

ID	Parameter	Description of Mitigation Measure	Marine Physical Environment	Offshore Air Quality	Benthic Ecology	Fish (Including Basking Shark) & Shellfish Ecology	Marine Mammals	Offshore Ornithology	Commercial Fisheries	Shipping & Navigation	Offshore Archaeology & Cultural Heritage	Military & Civil Aviation	Seascape, Landscape & Visual Impact	Infrastructure & Other Marine Users	Socio-economics	Climate Change	Major Accidents & Disasters
M-1	Scour Protection	Scour protection measures will be designed, where applicable, to reduce impacts on the prevailing hydrodynamic, wave and sediment regimes.	✓														
M-2	Air Quality Standards	The Applicant will require compliance with relevant national and international maritime air quality standards and legislation, including the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI Regulations.		✓													
M-3	Pollution from Ships	Compliance with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 and adherence to the "OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic".			✓	✓											✓
M-4	Project Environmental Management Plan	Development of, and adherence to, a Project Environmental Management Plan (PEMP) which will be in accordance with an Outline PEMP to be submitted with the Section 36 Application. The PEMP will include measures to manage the environmental risks associated with the construction and operation of the offshore components of the Project.	✓	✓	✓	✓	✓	✓								✓	
M-5	Invasive Non-Native Management Plan	Development of, and adherence to, an Invasive Non-Native Species Management Plan (INNSMP). This plan will detail mitigation measures to reduce the introduction and transfer of invasive non-native species.			✓	✓											
M-6	Soft-Start and Ramp-Up for Piling	Implementation of soft-start and ramp-up procedure for piling. Each piling event would commence with a soft-start at a lower hammer energy followed by a gradual ramp-up for at least 20 minutes to the maximum hammer energy required. The soft-start and ramp-up allows mobile species to move away from the area before the maximum hammer energy with the greatest noise impact area is reached. The soft-start and ramp-up procedure, along with other mitigation measures for piling, will be detailed in the Marine Mammal Mitigation Protocol (MMMP).				✓	✓										
M-7	Marine Pollution Contingency Plan	Development of, and adherence to, a Marine Pollution Contingency Plan (MPCP). The MPCP will provide guidance to the Project personnel, contractors and subcontractors on the actions and reporting requirements in the event of spills and collision incidents. The MPCP will also contain emergency plans and mitigation procedures for a range of potential marine pollution incidents.	✓		✓	✓	✓	✓	✓	✓							
M-8	Cable Plan	Development of, and adherence to, a Cable Plan (incorporating a Cable Burial Risk Assessment). The Cable Plan will confirm planned cable routeing, burial, and any additional external cable protection, and will set out methods for post-installation cable monitoring. Furthermore, this plan will detail environmental sensitives and design considerations to mitigate, as far as practicable, the effects of inter-array cable laying and associated protection during installation and operation of the Windfarm Development Area (WDA) infrastructure.	✓		✓	✓	✓		✓	✓	✓			✓			
M-9	Invasive Non-Native Species	Adherence to the International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM) Convention (2004) which provides global regulations to control the transfer of potentially invasive species.			✓	✓											✓
M-10	Unexploded Ordnance	Development of an Unexploded Ordnance (UXO) Threat and Risk Assessment.							✓	✓	✓			✓			✓

ID	Parameter	Description of Mitigation Measure	Marine Physical Environment	Offshore Air Quality	Benthic Ecology	Fish (Including Basking Shark) & Shellfish Ecology	Marine Mammals	Offshore Ornithology	Commercial Fisheries	Shipping & Navigation	Offshore Archaeology & Cultural Heritage	Military & Civil Aviation	Seascape, Landscape & Visual Impact	Infrastructure & Other Marine Users	Socio-economics	Climate Change	Major Accidents & Disasters
M-11	Hierarchy of Unexploded Ordnance Clearance Methods	The current hierarchy of UXO clearance techniques, in order of preference, are: • Avoid (through micro-siting); • Move UXO without clearing it (if safe to do so); • Remove the UXO to an onshore facility without clearing it (if safe to do so); • Low-order clearance if above options not practicable; and • High-order clearance, if low-order clearance not possible, or in the unlikely event that low-order deflagration was unsuccessful.				✓	✓										✓
M-12	Marine Mammal Mitigation Protocol	Development of, and adherence to, a Marine Mammal Mitigation Protocol (MMMP) for UXO and a MMMP for piling. The MMMP will set out the protocol to reduce the risk of underwater noise from UXO clearance and piling from causing auditory injury to marine mammals. Note that UXO clearance will be the subject of a separate marine licence application post-consent which will require submission of a MMMP for UXO clearance.				✓	✓										
M-13	Scottish Marine Wildlife Watching Code	The Scottish Marine Wildlife Watching Code (Scottish Natural Heritage (SNH), 2017) approach will be followed for all Project vessels.				✓	✓							✓			
M-14	Micro-siting	Micro-siting of infrastructure, where practicable, around any identified sensitive habitats and identified anomalies of archaeological interest.			✓	✓					✓						
M-15	Wind Turbine Generator Selection	The smallest size of turbine considered has been selected at a minimum rating much higher than most current operational turbines, reducing the number required to be installed to achieve the same capacity.						✓								✓	
M-16	Fisheries Management and Mitigation Strategy	Development of, and adherence to, a Fisheries Management and Mitigation Strategy (FMMS). This will set out the means of ongoing fisheries liaison through construction and Operation and Maintenance (O&M) phases of the WDA and detail any mitigation measures to be put in place to limit effects on commercial fisheries activity. This plan will detail the approach to undertaking pre-construction, construction, and operational works in co-operation with existing commercial fisheries activities, developed in consultation with fishing representatives. The plan will be informed by engagement with relevant stakeholders, as appropriate.							✓								
M-17	Fisheries Liaison Officer	Appointment of a Fisheries Liaison Officer (FLO) throughout the lifetime of the Project to ensure ongoing communication between the Project and commercial fisheries stakeholders.							✓								
M-18	Navigational Safety Plan	Development of, and adherence to, a Navigational Safety Plan (NSP). This plan will describe measures put in place related to navigational safety, including information on safety zones, charting, construction buoyage, temporary lighting and marking, and means of notification of activities associated with the WDA to other sea users.							✓	✓				✓			✓
M-19	Notice to Mariners	Advanced warning and accurate location details of construction, maintenance and decommissioning operations, associated Safety Zones and advisory passing distances will be given via Notices to Mariners and Kingfisher webpage. All notices will be uploaded to the Project website.							✓	✓				✓			✓
M-20	Lighting and Marking Plan	Development of, and adherence to, a Lighting and Marking Plan (LMP). This plan will set out the marine and aviation navigational lighting and marking measures to be applied during the construction and operation of the WDA.							✓	✓		✓	✓	✓			✓

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M-21	Fisheries Best Practice	Adherence to best practice guidance with regards to fisheries liaison and procedures in the event of interactions between the WDA and fishing activities (e.g., Fisheries Liaison with Offshore Wind and Wet Renewables group (FLOWW), 2014; 2015).							✓								
M-22	Fisheries Working Group	If appropriate, fisheries working groups will be organised to encourage collaboration between the Project and fishing community and provide a forum to discuss shared issues, concerns, and suggestions to help inform the Project approach. Noting the confidential nature of some commercial fisheries information and areas of interest, one-to-one engagement will continue to be offered to fishers throughout the lifetime of the Project.							✓								
M-23	Safety Zones	Application for and use of Safety Zones of up to 500 m during construction, major repairs and decommissioning phases.							✓	✓				✓			✓
M-24	Dropped Objects	Dropped objects on the seabed during works associated with the WDA which may pose a hazard will be reported in line with the Marine Directorate - Licensing Operations Team procedures. Objects will be recovered where they pose a hazard to other marine users and where recovery is possible.							✓	✓				✓			✓
M-25	Marking	All WDA infrastructure will be appropriately marked on the United Kingdom Hydrographic Office Admiralty Charts.							✓	✓				✓			✓
M-26	Search and Rescue	Development of a Search and Rescue (SAR) checklist in consultation with the Maritime and Coastguard Agency (MCA) to ensure compliance with Marine Guidance Note (MGN) 654 and its annexes. This will be completed post consent.								✓		✓		✓			✓
M-27	Emergency Response and Cooperation Plan	Development of, and adherence to, an Emergency Response and Cooperation Plan (ERCoP). This plan ensures co-operation with the MCA by detailing the design parameters of the WDA, emergency contact details, and processes to be followed.							✓	✓		✓		✓		✓	✓
M-28	Guard Vessels	Where appropriate, guard vessels will be used to ensure adherence with Safety Zones (M-23) or advisory passing distances.							✓	✓				✓			✓
M-29	Marine Coordination Centre	A marine coordination centre will be implemented to manage Project vessels throughout construction, operation and maintenance and decommissioning.							✓	✓				✓			✓
M-30	Blade Tip Clearance / Air Gap	Blade tip clearance height / Air Gap of at least 22 m above Mean High Water Springs (MHWS) as required by MGN 654.						✓		✓							✓
M-31	Vessel Marine Regulations	Compliance of all Project vessels with international Marine Regulations as adopted by the Flag State, notably Convention on International Regulations for Preventing Collisions at Sea (COLREGs) IMO, 1972/77) and International Convention for the Safety of Life at Sea (SOLAS) (IMO, 1974).							✓	✓				✓			✓
M-32	Vessel Management Plan	Development of, and adherence to, a Vessel Management Plan. This plan will provide the procedures for management and coordination of vessels to mitigate the impact of Project vessels.							✓	✓				✓		✓	
M-33	Aeronautical Navigational Marking	Appropriate marking of the WDA on aeronautical charts. This will include provision of the positions and heights of structures to the Civil Aviation Authority, Ministry of Defence and Defence Geographics Centre.										✓					✓

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M-34	Development Specification and Layout Plan	Development of, and adherence to, a Development Specification and Layout Plan. The layout of the WTGs will be finalised post consent. Consultation with the MCA and Northern Lighthouse Board (NLB) will be undertaken to ensure that the specific WTG layout is compatible with potential SAR activity (M-26).								✓		✓		✓			✓
M-35	Failures of Lighting and Marking	Failures of the lighting and marking in the WDA will be appropriately reported and rectified as soon as practicable. Interim hazard warnings (i.e. Notice to Mariners (M-19)) will be put in place as required.							✓	✓		✓		✓			✓
M-36	Site Navigation Marking	Marking and lighting of the site following consultation with NLB and in line with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Guidance G1162 (IALA, 2021) including a buoyed construction area.								✓							✓
M-37	Archaeological Exclusion Zones	Implementation of Archaeological Exclusion Zones (AEZ) around known sites of archaeological importance.									✓						
M-38	Archaeological Survey Input	Archaeological experts will provide input into the specifications for and analysis of future preconstruction geotechnical and geophysical surveys.									✓						
M-39	Written Scheme of Investigation	Development of, and adherence to an Offshore Written Scheme of Investigation (WSI). This will clearly detail the process and approach to undertaking heritage works associated with the WDA.									✓						
M-40	Protocol for Archaeological Discoveries	Development of, and adherence to a Protocol for Archaeological Discoveries (PAD). This will provide procedures for avoidance where practicable, as well as reporting and investigation of unexpected archaeological discoveries found during the site investigations and construction activities.									✓						
M-41	Further Investigation	Further investigation of any identified anomalies of possible archaeological interest that cannot be avoided by micro-siting of design.									✓						
M-42	Archaeological Watching Briefs	Archaeological Watching Briefs are a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. These will be carried out prior to any activities that interact with the seabed.									✓						
M-43	Distance from Coast	The northern and eastern boundary of the WDA has been defined by implementation of a buffer of at least 12 km from the nearest points of Islay and Colonsay. This will reduce the magnitude of impact on seascape, landscape and visual impact receptors. Further refinement of the WDA boundary is likely once additional data is collected following the completion of further WDA surveys and studies, and as part of the outcomes of the EIA process, including feedback from stakeholders.											✓				
M-44	Supply Chain Development Statement	Adherence to a Supply Chain Development Statement (SCDS). As part of the ScotWind bidding process, the Applicant provided a SCDS, which outlines a 'commitment' scenario and an 'ambition' scenario for the level of supply chain content to be secured within Scotland and the UK. To enhance the positive socio-economic effects associated with the supply chain, the Applicant places a strong focus on supply chain engagement and skills development to build capacity across Scotland. The SCDS commitments will form a Contracted Position Statement when the Applicant enters a lease with Crown Estate Scotland.													✓		

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M-45	Employment of a Community Engagement Manager	Employment of a locally-based Community Engagement Manager to identify community priorities and assist with local community development initiatives throughout the development of the Project.													✓		
M-46	Decommissioning Programme	Development and adherence to a Decommissioning Programme. This programme will identify all the items of equipment, infrastructure and materials that have been installed or drilled and describes the decommissioning solution for each, whilst considering the potential environmental effects of each method alongside appropriate mitigation techniques that can be implemented.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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